C–C++ Beautifier HOW–TO

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C–C++ Beautifier HOW–TO

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This document will help you to format (beautify) the C/C++ programs so that it is more readable and confirms to your site C/C++ coding standards. The information in this document applies to all the operating sytems that is – Linux, MS DOS, Windows 95/NT, OS/2, IBM OSes, all flavors of Unix like Solaris, HPUX, AIX, SCO, Sinix, BSD, SCO, etc.. and to all other operating systems which support "C" compiler (it means almost all the operating systems on this planet!).

1.Introduction

2.How can I trust Beautifier programs??!!

3.Beautifiers for other Languages

4.Verification Script

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1.Introduction

Coding standards for C/C++ or any language is required in order to make the programs more readable/understandable by programmers. There are C/C++ beautifiers (formating tools) to accomplish this goal. Formatted (beautified) code improves the **productivity** of programmers by **2 times**!!

On Linux/Unixes there is a command called **"indent"** and **"cb"** . Refer to 'man indent' and 'man cb'. Note that **indent** and **cb** work for only "C" programs. For "C++" programs use **"bcpp"**. Download the beautifier program from one of the following

- C++ : BCPP site is at http://www.clark.net/pub/dickey/bcpp/bcpp.html
- C++ : http://www.consultix−inc.com/www.consultix−inc.com/c++b.html
- C : http://www.chips.navy.mil/oasys/c/

I used BCPP to format the C++ programs and it worked fine for me. You may want to check other tools and use the one which you may like the most.

2.How can I trust Beautifier programs??!!

For 100% assurance you need a **SCIENTIFIC** way to validate and trust a beautifier program. The method described in this section will enable the beautifier program to be accepted as "trust−worthy" and reliable.

In order to verify that beautifier programs like **bcpp**, **indent** or **cb** is not damaging or changing the input source−code after formatting, you can use the shell script verification program or use the following technique −

Generate the object code from the original input source code using the compiler −

```
g++ -c myprogram.cpp
```

Here g++ is GNU C++ compiler. This will create object output myprogram.o

Save this file −

```
mv myprogram.o myprogram_orig.o
```

Now run bcpp −

```
bcpp myprogram.cpp
```

This will create the formatted output program file myprogram.cpp and move the original file to myprogram.cpp.orig. Compile the new file with −

```
g++ -c myprogram.cpp
```

Now use the unix 'diff' command to compare the two object files −

```
diff myprogram.o myprogram_orig.o
```

Both these files **MUST BE IDENTICAL**. This verifies that bcpp is working perfectly. On DOS or Windows 95 you may want to use the free Cygnus Cygwin 'diff' or 'MKS' utilities.

Also you can use the assembler output instead of object output in compiler. Like −

```
g++ −S myprogram.cpp
```

This creates myprogram.s. Verify with −

```
diff myprogram.s myprogram_orig.s
```

This step gives 100% guarantee that your valuable source code is intact and bcpp is JUST doing ONLY formatting and is NOT changing or damaging your code in any way. This method gives you 100% quality assurance and life term or long term **WARRANTY** on beautifier programs like 'bcpp', 'cb' or 'indent'.

It is strongly recommended that you do these two steps every time you run beautifier programs like **bcpp**, **indent** or **cb**.

3.Beautifiers for other Languages

Visit the following sites to get beautifiers for other languages like HTML, SQL, Java, Perl, Fortran.

- HTML : http://www.digital−mines.com/htb/
- HTML : http://www.datacomm.ch/mwoog/software/perl/beautifier.html
- HTML : http://www.watson−net.com/free/perl/s_fhtml.asp
- SQL : http://www.netbula.com/products/sqlb
- Java : http://home.wtal.de/software−solutions/jindent/frameset.html
- Perl : http://www.consultix−inc.com/www.consultix−inc.com/talk.htm
- Perl : http://www.consultix−inc.com/www.consultix−inc.com/perl_beautifier.html
- Fortran beautifier : http://www.aeem.iastate.edu/Fortran/tools.html
- C++ : BCPP site is at http://www.clark.net/pub/dickey/bcpp/bcpp.html
- C++ : http://www.consultix−inc.com/www.consultix−inc.com/c++b.html
- C : http://www.chips.navy.mil/oasys/c/

- White paper on beautifier : http://www.consultix−inc.com/www.consultix−inc.com/talk.htm

To create presentation of codes to display using HTML −

- Presentation (C,C++,Java) to html : http://www.perlstudio.de/cbindex.html

Also search the search engines like http://www.yahoo.com or http://www.lycos.com and search for keyword "beautfier".

4.Verification Script

This is a Korn shell script to verify beautifier program. Requires "pdksh*.rpm" from Linux 'contrib' cdrom. Save this file as 'text' file and chmod a+rx on it. You can re−write this shell script in PERL so that you can use it on Window 95/NT or MSDOS. Uncomment the PRGM variable to point to **bcpp**, **cb** or **indent**

```
#!/bin/ksh

# Verification program to check C++ Beautifiers 'bcpp', 'indent' or cb
#############################################################
# Copyright
# The copyright policy is GNU/GPL.
# Author: Al Dev (Alavoor Vasudevan) alavoor@yahoo.com
#############################################################

check_beautify_now()
{
        # Remove all the temp files....
        \rm -f ${TMP_FILE}
        \rm -f ${TMP_CPPFILE}*.*

        FNAME=$1
        if [ ! -f ${FNAME} ]; then
                print "\nError: The file ${FNAME} does not exist!!. Aborting now ...."
                exit
        fi
        \cp  -f ${FNAME} ${TMP_CPPFILE}.cpp
        ${COMPILER} -c ${TMP_CPPFILE}.cpp
        if [ ! -f ${TMP_CPPFILE}.o ]; then
                print "Fatal Error: Failed to compile ${FNAME}. Aborting now... "
                exit
        fi
        \mv -f ${TMP_CPPFILE}.o ${TMP_CPPFILE}_orig.o

        aa=`basename $PRGM`
        print "\nRunning, verifying $aa on ${FNAME}"
        ${PRGM} ${TMP_CPPFILE}.cpp
        ${COMPILER} -c ${TMP_CPPFILE}.cpp
        \rm -f $TMP_FILE
        diff ${TMP_CPPFILE}.o ${TMP_CPPFILE}_orig.o 1> $TMP_FILE 2>> $TMP_FILE
        result=""
        result=`wc -c $TMP_FILE | awk '{print $1}' `
        if [ "$result" = "0" ]; then
                print "Success!! Beautifier $aa is working properly!!\n"
        else
                print "Fatal Error: Something wrong!! Beautifier is not working!!"
                exit
        fi
#       ${COMPILER} -S ${TMP_CPPFILE}.cpp
#       diff ${TMP_CPPFILE}.s ${TMP_CPPFILE}_orig.s

        # Remove all the temp files....
        \rm -f ${TMP_FILE}
        \rm -f ${TMP_CPPFILE}*.*
}

########## Main of program begins here ##################3
```

```
#PRGM=/usr/bin/bcpp
#PRGM=/usr/bin/cb
PRGM=/usr/bin/indent
COMPILER=/usr/bin/g++

TMP_FILE=beautify.tmp
TMP_CPPFILE=beautify-tmp_cppfile

print -n "Enter the C++ file name <default is *.cpp> : "
read ans
if [ "$ans" = "" -o "$ans" = " " ]; then
        ans="ALL"
else
        FILENAME=$ans
fi

# Remove all the temp files....
\rm -f ${TMP_FILE}
\rm -f ${TMP_CPPFILE}*.*

if [ "$ans" != "ALL" ]; then
        check_beautify_now ${FILENAME}
else
        ls *.cpp |
        while read FILENAME
        do
                check_beautify_now ${FILENAME}
        done
fi
```

5.Related URLs

Visit following locators which are related to C, C++ −

- Vim color text editor for C++, C
- C++ Programming HOWTO
- CVS HOWTO for C++ programs
- Linux goodies main site http://www.aldev.8m.com
- Linux goodies mirror site http://www.aldev.webjump.com

6.Other Formats of this Document

This document is published in 11 different formats namely − DVI, Postscript, Latex, Adobe Acrobat PDF, LyX, GNU−info, HTML, RTF(Rich Text Format), Plain−text, Unix man pages and SGML.

- You can get this HOWTO document as a single file tar ball in HTML, DVI, Postscript or SGML formats from − ftp://metalab.unc.edu/pub/Linux/docs/HOWTO/other−formats/ or ftp://metalab.unc.edu/pub/Linux/docs/HOWTO/other−formats/
- Plain text format is in: ftp://metalab.unc.edu/pub/Linux/docs/HOWTO or ftp://metalab.unc.edu/pub/Linux/docs/HOWTO

- Translations to other languages like French, German, Spanish, Chinese, Japanese are in ftp://metalab.unc.edu/pub/Linux/docs/HOWTO or ftp://metalab.unc.edu/pub/Linux/docs/HOWTO Any help from you to translate to other languages is welcome.

The document is written using a tool called "SGML tool" which can be got from − http://www.xs4all.nl/~cg/sgmltools/ Compiling the source you will get the following commands like

- sgml2html C−C++Beautifier−howto.sgml (to generate html file)
- sgml2rtf C−C++Beautifier−howto.sgml (to generate RTF file)
- sgml2latex C−C++Beautifier−howto.sgml (to generate latex file)

This document is located at −

- http://metalab.unc.edu/LDP/HOWTO/C−C++Beautifier−HOWTO.html

Also you can find this document at the following mirrors sites −

- http://www.caldera.com/LDP/HOWTO/C−C++Beautifier−HOWTO.html
- http://www.WGS.com/LDP/HOWTO/C−C++Beautifier−HOWTO.html
- http://www.cc.gatech.edu/linux/LDP/HOWTO/C−C++Beautifier−HOWTO.html
- http://www.redhat.com/linux−info/ldp/HOWTO/C−C++Beautifier−HOWTO.html
- Other mirror sites near you (network−address−wise) can be found at http://metalab.unc.edu/LDP/hmirrors.html select a site and go to directory /LDP/HOWTO/C−C++Beautifier−HOWTO.html

In order to view the document in dvi format, use the xdvi program. The xdvi program is located in tetex−xdvi*.rpm package in Redhat Linux which can be located through ControlPanel | Applications | Publishing | TeX menu buttons.

```
To read dvi document give the command −
        xdvi −geometry 80x90 howto.dvi
And resize the window with mouse. See man page on xdvi.
To navigate use Arrow keys, Page Up, Page Down keys, also
you can use 'f', 'd', 'u', 'c', 'l', 'r', 'p', 'n' letter
keys to move up, down, center, next page, previous page etc.
To turn off expert menu press 'x'.
```

You can read postscript file using the program 'gv' (ghostview) or 'ghostscript'. The ghostscript program is in ghostscript*.rpm package and gv program is in gv*.rpm package in Redhat Linux which can be located through ControlPanel | Applications | Graphics menu buttons. The gv program is much more user friendly than ghostscript. Ghostscript and gv are also available on other platforms like OS/2, Windows 95 and NT.

```
To read postscript document give the command −
        gv howto.ps

To use ghostscript give −
        ghostscript howto.ps
```

- Get ghostscript for Windows95, OS/2 and all OSes from http://www.cs.wisc.edu/~ghost

You can read HTML format document using Netscape Navigator, Microsoft Internet explorer, Redhat Baron Web browser or any other web browsers.

You can read the latex, LyX output using LyX a "X−Windows" front end to latex.

7.Copyright

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